



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/721,403 | 11/25/2003 | Patrick A. Hosein | 4740-242 | 8049 |
| 24112 7590 07/01/2009 COATS & BENNETT, PLLC 1400 Crescent Green, Suite 300 Cary, NC 27518 | | | | |
| EXAMINER | | | | |
| NGUYEN, HANH N | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2416 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 07/01/2009 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/721,403

Applicant(s)

HOSEIN, PATRICK A.

Examiner

Hanh Nguyen

Art Unit

2416

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Petition filed on 11/16/07.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12-31, 35-39 and 41-44 is/are rejected.
- 7) ☒ Claim(s) 9-11, 32-34, 40 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Note

In response to the Applicant's petition filed on 11/16/07, the restriction requirement issued by the patent office on 6/1/07 is now withdrawn. Claims 1-44 are now pending. Applicant is advised that the Previous office action issued on 6/8/09 by the Patent office should be disregarded.

Claim Rejections - 35 USC § 101

Claims 1, 13, 20, 36 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to particular machine, or (2) transform underlying subject matter (such as an article or material) to a different state or thing. See page 10 of In Re Bilski 88 USPQ2d 1385. The instant claims are neither positively tied to a particular machine that accomplishes the claimed method steps nor transform underlying subject matter, and therefore do not qualify as a statutory process.

Regarding claim 1, the claimed method including steps of:

" determining targeted queuing delays for reverse link transmit data; monitoring transmit data queue sizes and ongoing reverse link throughput expressed as current average throughput for data transmissions by the mobile terminal on the reverse link; and generating reverse link rate requests based on determining whether targeted queuing delay violations are expected given the transmit data queue sizes and the ongoing

reverse link throughput" is broad enough that the claim could be completely performed mentally, verbally or without a machine nor is any transformation apparent.

Applicant is required to amend the claim such that there is at least one limitation having a physical structure hardware performing the limitation.

Regarding claim 13, the claimed method including steps of: "receiving targeted queuing delay information for one or more service instances being supported by the mobile station; periodically calculating an expected queuing delay for each service instance; requesting a reverse link rate increase if any expected queuing delay exceeds a first delay value based on a targeted delay for the corresponding service instance; and requesting a reverse link rate decrease if the expected queuing delay for each service instance falls below a second delay value based on the targeted delay for the service instance" .

Claims 14-19 are rejected because they depend on claim 13 respectively.

Applicant is required to amend the claim such that there is at least one limitation having a physical structure hardware performing the limitation.

Regarding claim 20, the claimed method including steps of:

"receiving targeted queuing delay information for one or more service instances being supported by the mobile station; and periodically calculating an overall data rate required to achieve targeted queuing delays for the service instances and requesting a rate change based on the overall data rate".

Applicant is required to amend the claim such that there is at least one limitation having a physical structure hardware performing the limitation.

Regarding claim 36, the claimed method including steps of:

"determining targeted queuing delays for one or more data connections being used to serve a plurality of mobile stations on one or more forward link communication channels; determining expected queuing delays for the data connections by monitoring transmit data queue sizes and forward link throughput for the data connections; and adjusting at least one of a scheduling priority and a forward link data rate for a given data connection based on the expected and targeted queuing delays".

Applicant is required to amend the claim such that there is at least one limitation having a physical structure hardware performing the limitation.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 24, 39 and 42-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 24, it is not clearly addressed at "determining whether targeted queuing delay violations **are expected given the transmit data queue size**" However, according to specification on page 3, para[0007], and page 6, para[0015], examiner considers the claimed "target queuing delay violations " as determining

whether the time limits data to be transmitted from the mobile station 12 for the service instance can "wait" in the mobile station queue is violated or exceeded or too long".

In claim 39, it is not clear what is meant by "configuring scheduling utility functions used to determine the scheduling priorities of the data connections to be dependent on the expected queuing delays".

In claim 42, it is not clearly addressed what the "non-standard rate" and "standard rate" mean. Claims 43, 44 have similar problem at definition of "non-standard rate" and "standard rate".

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 20-23, 42-44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 20, the specification does not describe "periodically calculating an overall data rate required to achieve targeted queuing delays for the service instances". Rather, the specification on page 12, para [0027-0029] describes that the

mobile station periodically sets an over desired rate x for each service instance (see fig.5, step 136); then calculates the target rate required to achieve the target queuing delay (fig.5; step 138) ; then adds the target rate to the overall desired rate (step 140; fig.5). The mobile does not calculate the overall rate, but only sets the overall data rate.

Claims 21-23 are also rejected because each of the claims requires the step of "calculating the overal data rate" which is not described in the specification.

Examiner will conduct art search in claims 20-23 upon an explanation is made by applicant.

Regarding claim 42, it appears that the specification does not describe "transmitter circuit to transmit signals to a plurality of mobile station; receiver circuits to receive signals from a plurality of mobile stations" . It is noted that the specification on page 9, para [0021] only introduce the receive circuit 52 and transmitter circuit 56. Applicant is noted that in claim 42, " transmitter circuits to transmit signals to..." and " receiver circuits to receive signals from" made the claim non-statutory because "a signal claim" is not statutory.

Further, the specification does not describe the processing circuit granting "non-standard rate" requests from mobile station by "mapping each non-standard rate request into a standard set of rates based on selecting one or more combinations of standard rate". Applicant is suggested to look at specification on page 12, para [0029] and [0030] .

Claim 43 is also rejected because " mapping each non-standard rate request into a standard set of rates based on selecting one or more combinations of the standard

rates comprises selecting at least a first standard rate to be used by a requesting mobile station" is not described in the specification.

Claim 44 is also rejected because "mapping each non-standard rate request into a standard set of rates based on selecting one or more combinations of the standard rates comprises selecting two or more standard rates to be used by a requesting mobile station over one or more defined transmit intervals such that an effective rate achieved by the requesting mobile station over the one or more defined transmit intervals substantially equals the non-standard rate requested by the requesting mobile station" is not described in the specification.

Examiner will conduct art search in claims 42-44 upon an explanation is made by applicant.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, 12, 24-31 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nanda et al. (US 2004/0160922 A1) in view of Lohtia et al. (US pat. 7,116,708 B2).

In claims 1, 3, 24, 26, Nanda et al. discloses a method of reverse link rate control at a mobile station (see abstract; determining data rate for a reverse link) comprising: determining targeted queuing delays for reverse link transmit data (examiner considers the claimed "target queue delay" as "a maximum permitted delay" in Nanda et al. Refer to para [0022] and [0025] which discloses a maximum permitted delay for a service/flow is negotiated between a mobile station and base station and fig.4, step 402; col.10, para[0102]) ;

monitoring transmit data queue sizes (since the claimed limitation does not indicate how the data queue size is monitored; therefore, examiner relies upon para [0027] of Nanda et al. which discloses "mobile station arranges the output queue so that packets are stored in the order of their deadlines and transmitted before their deadline; wherein the deadline refers to the maximum permitted delay for the service. See further fig.4, step 403). Nanda et al. further discloses generating reverse link rate requests based on determining whether targeted queuing delay violations are expected given the transmit data queue sizes (see para [0027] and [0028] and fig.4, steps 405, 406; the mobile station determines a required data rate based on the deadlines (which is described as maximum permitted delay in para[0027]) associated with the packets in the output queue. Further, in para [0037], the mobile station may require a higher rate to satisfy its QOS if the mobile station determines that any packet in its queue would miss its deadline at a current rate). Nanda et al. discloses generating reverse link rate request based on throughput for data transmission by the mobile terminal (since applicant defines the meaning of "throughput" in the Remark filed on 1/23/09, pages 15, 16 as

"how much data is put through a channel or channel efficiency" and the body of the claim does not indicate which device monitors "the throughput" of data transmission. Therefore, in Nanda et al., fig.4, steps 411, 412, 413, para [0102]; examiner considers "a data congestion between the mobile and the base station" as "throughput" because the data congestion alerted to the mobile station represents an amount of data transmission has been reduced due to the congestion which means the data transmission efficiency has been reduced than normal. Based on the data congestion, the mobile station drops packets in the queue, determines a new data rates for transmission of the new queue of data packet).

Nanda et al. does not disclose generating a reverse link rate request based on the monitored average throughput for data transmission by the mobile terminal on the reverse link.

Lohtia et al. discloses a method of controlling the data rate transfer over a wireless link between a mobile station 43 and a RNC 40 (see abstract). In specifically, at fig.2, col.4, lines 60-67; Lohtia discloses a users or mobile station 43 requests a higher data rates if an average throughput for the user is less than the requested data rate (generating a reverse link rate request based on the monitored average throughput for data transmission by the mobile terminal on the reverse link). Therefore, it would have been obvious to one skilled in the art to apply the teaching of average throughput into Nanda et al. to generate the reverse link rate request based on an average throughput of the mobile station. The motivation is provide channel efficiency.

In claims 12 and 35, Nanda et al. does not disclose calculating an effective data rate from the required data rate that can be achieved using the requested effective data rate. Lohtia discloses in col.2, lines 35-45 and col.5, lines 45-51; despite a high data rate requested by the mobile station, the scheduler 100 (see fig.2) is able to reduce the effective data rate of communications to mobile station 43 if the scheduler 100 determines that the application alyer 102 does not required the requested high data rate, or if the conditions in the network do not permit transmission at the requested rate (calculating an effective data rate from the required data rate that can be achieved using the requested effective data rate). Therefore, it would have been obvious to one skilled in the art to apply the determining of effective data rate into the Nada et al. so that a mobile station is allocated data rate based on needs. The motivation is to reduce waste of resources in the network.

IN claims 2 and 25, Nanda et al. discloses determining targeted queuing delays for reverse link transmit data comprises determining a targeted queuing delay for each service instance being supported by the mobile station (see fig.4, steps 401, 402, 403, para [0102]; mobile station determines packets for transmission for a number of communicatin services including determining a transmission deadline and arranges the packets in a queue for transmission in accordance with the determined transmission deadline).

In claims 4 and 27, Nanda et al. discloses generating reverse link rate requests based on the transmit data queue sizes, the ongoing reverse link throughput, and the targeted

queuing delays comprises determining whether an expected queuing delay of any service instance exceeds a target queuing delay for that service instance and, if so, requesting a reverse link rate increase (see para [0037], [0051]; the mobile station may require a higher rate to satisfy its QOS if the mobile station determines that any packet in its queue would miss its deadline at a current rate).

In claims 5 and 28, Nanda et al. discloses generating reverse link rate requests based on the transmit data queue sizes, the ongoing reverse link throughput, and the targeted queuing delays comprises determining whether expected queuing delays for all service instances are below target queuing delays defined for the service instances and, if so, requesting a reverse link rate decrease (see para[0064], mobile station may request to decrease , increase the grant or request) .

In claims 6 and 29, nanda et al. discloses determining a targeted queuing delay for each service instance being supported by the mobile station comprises receiving service instance delay requirements from a wireless communication network supporting the mobile station (see para [0025], mobile station is aware of the negotiated QOS parameters such as maximum delay associated with the flow).

In claims 7 and 30, nanda et al. discloses generating reverse link rate requests based on the transmit data queue sizes, the ongoing reverse link throughput, and the targeted queuing delays comprises generating reverse link rate requests on an event-triggered basis by comparing expected queuing delays for each of one or more service instances to targeted queuing delays associated with those service instances (see fig.4, steps 411, 412, 413, 414, para [0102]; based on the congestion (even- triggered basis)

alerted to the mobile station, mobile station determines a new data rate for transmission, wherein the new data rate is lower than previously determined data rate).

In claims 8 and 31, Nanda et al. discloses generating reverse link rate requests based on the transmit data queue sizes, the ongoing reverse link throughput, and the targeted queuing delays comprises generating reverse link rate requests on a periodic basis (see para [0062]; to manage the QOS such as maximum delay, periodic messages that request rates and delay are preferable) to control an average queuing delay of the mobile station relative to a targeted queuing delay.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 36-39, 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Nanda et al. (US Pub. 2004/0160922 A1).

In claim 36, since each of the claimed limitation does not indicate whether the base station or mobile station performing the step, therefore, examiner interpretes the claimed limitation in broadest sense. Nanda et al. discloses determining targeted queuing delays for one or more data connections being used to serve a plurality of mobile stations on one or more forward link communication channels (see fig.4, steps 402&403; mobile station determines a transmission deadline of each data packet and arranges the data packets in transmission queue in accordance with the determined transmission deadline); determining expected queuing delays for the data connections by monitoring transmit data queue sizes and forward link throughput for the data connections (see para [0027] of Nanda et al. which discloses "mobile station arranges the output queue so that packets are stored in the order of their deadlines and transmitted before their deadline; wherein the deadline refers to the maximum permitted delay for the service. See further fig.4, step 403). Nanda et al. discloses adjusting a forward link data rate for a given data connection (see fig.4, step 409; para [0102], base station communicates acceptance of the determined data rate for transmission of packets from the mobile station). Nanda et al. further disclose adjusting at least one of a scheduling priority for a given data connection based on the expected and targeted queuing delays (see para[0042]; during congestion periods, mobile station prioritizes what packets in its queue may be dropped such as determining packets that are likely to miss their delay deadline should be dropped; packets from services whose current rate is smaller than the negotiated packet loss rate should be dropped).

In claim 41, Nanda et al. discloses determining QOS requirement associated with each data connection (see para[0022] ; during a service of communication link, base station is required to meet qos parameters such as data rate, maximum delay).

In claim 37, Nanda et al. discloses adjusting the scheduling priority of one or more data connections over one or more scheduling intervals responsive to determining that the expected queuing delays exceed the targeted queuing delays (see fig.4, step 414, para [0102]; determines a new duration for use of the determined new data rate for transmission of packets based arrangement of data packets in the new queue. The process goes back step 408 to repeat the process of acceptance or rejection).

In claim 38, Nanda et al. discloses in a given forward link service interval, adjusting the forward link data rate for the given connection responsive to determining that the expected queuing delay exceeds the targeted queuing delay (para [0037]; if the mobile station determines that any packet in its queue would miss its deadline at a current rate, then it may require a higher rate to satisfy its QOS)

In claim 39, nanda et al. discloses configuring scheduling utility functions used to determine the scheduling priorities of the data connections to be dependent on the expected queuing delays (see para [0024], base station may assign different mapping as a function of delay requirement).

Allowable Subject Matter

Claims 9-11, 32-34, 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Au et al. (US pat. 7103350);

Scherzer et al. (US pat. 5895258 B1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Nguyen whose telephone number is 571 272 3092. The examiner can normally be reached on Monday-Thursday from 8AM to 4:30PM. The examiner can also be reached on alternate.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kwang Yao, can be reached on 5712723182. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 2416

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

./Hanh Nguyen/

Primary Examiner, Art Unit 2416